

## WHAT IS CLAIMED IS:

## 1. An internal combustion engine comprising:

a control system for controlling an engine operating parameter in accordance with processing of control data that includes a control data input whose value is at times transient; and

a processor for processing that control data input according to an algorithm that iterates during a transient to yield data values for the time derivative of the control data input during the transient, wherein an iteration of the algorithm includes processing the control data input according to a first function to yield a first data value, processing the control data input according to a second function to yield a second data value, and processing the first and second data values according to a third function to yield a data value for the time derivative of the control data input.

2. An engine as set forth in claim 1 wherein both first and second functions comprise a selectable parameter representing a selectable time interval used in calculating the data value for the time derivative of the control data input.

3. An engine as set forth in claim 1 wherein both first and second functions comprise a first selectable parameter representing a selectable time interval used in calculating the data value for the time derivative of the control data input, the first function further comprises a second selectable parameter representing a gain for the first function, and the second function

further comprises a third selectable parameter representing a gain for the second function.

4. An engine as set forth in claim 3 wherein the processing according to the third function comprises subtracting the second data value from the first data value.

5. An engine as set forth in claim 4 including an EGR valve, and wherein the engine operating parameter is EGR valve set point, the control data input represents desired engine fueling data, and the data value of the time derivative of desired engine fueling data resulting from processing by the processor is further processed by the processor with a data value for mass airflow entering the engine according to a schedule to develop a data value used in setting the EGR valve set point during a transient.

6. A control system in an internal combustion engine for controlling an engine operating parameter in accordance with processing of control data that includes a control data input whose value is at times transient, the control system comprising:

a processor for processing that control data input according to an algorithm that iterates during a transient to yield data values for the time derivative of the control data input during the transient, wherein an iteration of the algorithm includes processing the control data input according to a first function to yield a first data value, processing the control data input according to a second function to yield a second data value, and processing

the first and second data values according to a third function to yield a data value for the time derivative of the control data input.

7. A control system as set forth in claim 6 wherein both first and second functions comprise a selectable parameter representing a selectable time interval used in calculating the data value for the time derivative of the control data input.

8. A control system as set forth in claim 6 wherein both first and second functions comprise a first selectable parameter representing a selectable time interval used in calculating the data value for the time derivative of the control data input, the first function further comprises a second selectable parameter representing a gain for the first function, and the second function further comprises a third selectable parameter representing a gain for the second function.

9. A control system as set forth in claim 8 wherein the processing according to the third function comprises subtracting the second data value from the first data value.

10. A control system as set forth in claim 9 wherein the engine operating parameter is EGR valve set point, the control data input represents desired engine fueling data, and the data value of the time derivative of desired engine fueling data resulting from processing by the processor is further processed by the processor with a data value for mass airflow

entering the engine according to a schedule to develop a data value used in setting the EGR valve set point during a transient.

11. A method for controlling an engine operating parameter in an internal combustion engine in accordance with processing of control data that includes a control data input whose value is at times transient, the method comprising:

processing that control data input according to an algorithm that iterates during a transient to yield data values for the time derivative of the control data input during the transient, including processing the control data input during an iteration of the algorithm according to a first function to yield a first data value, processing the control data input during the iteration according to a second function to yield a second data value, and processing the first and second data values during the iteration according to a third function to yield a data value for the time derivative of the control data input.

12. A method as set forth in claim 11 wherein both first and second functions comprise a selectable parameter representing a selectable time interval, and the processing includes using a data value for the selectable parameter to calculate the time derivative of the control data input.

13. A method as set forth in claim 11 wherein both first and second functions comprise a first selectable parameter representing a selectable time interval, the first function further comprises a second selectable parameter representing a gain for the first function, the second function

further comprises a third selectable parameter representing a gain for the second function, and the processing further includes using data values for the first, second, and third selectable parameters to calculate the time derivative of the control data input.

14. A method as set forth in claim 13 wherein the processing according to the third function comprises subtracting the second data value from the first data value.

15. A method as set forth in claim 14 wherein the engine operating parameter is EGR valve set point, the control data input represents desired engine fueling data, and the data value of the time derivative of desired engine fueling data resulting from processing by the processor is further processed by the processor with a data value for mass airflow entering the engine according to a schedule to develop a data value used in setting the EGR valve set point during a transient.

16. An internal combustion engine comprising:

a control system for controlling exhaust gas recirculation in accordance with processing of desired engine fueling data whose value is at times transient; and

a processor for processing that desired engine fueling data according to an algorithm that iterates during a transient in the desired engine fueling data to yield data values for the time derivative of desired engine fueling during the transient, wherein an iteration of the algorithm includes processing the desired engine fueling data according to a function that

comprises at least one selectable parameter including a selectable time interval, and for processing the data values for the time derivative of desired engine fueling and data values of mass airflow into the engine to yield a data value for setting exhaust gas recirculation.

17. An engine as set forth in claim 16 wherein the at least one selectable parameter further includes a selectable parameter representing a gain for a first term of the function, a selectable parameter representing a gain for a second term of the function, and the function comprises subtraction of its second term from its first term.

18. A control system for controlling exhaust gas recirculation in an internal combustion engine in accordance with processing of desired engine fueling data whose value is at times transient, the control system comprising:

a processor for processing that desired engine fueling data according to an algorithm that iterates during a transient in the desired engine fueling data to yield data values for the time derivative of desired engine fueling during the transient, wherein an iteration of the algorithm includes processing the desired engine fueling data according to a function that comprises at least one selectable parameter including a selectable time interval, and for processing the data values for the time derivative of desired engine fueling and data values of mass airflow into the engine to yield a data value for setting exhaust gas recirculation.

19. A control system as set forth in claim 18 wherein the at least one selectable parameter further includes a selectable parameter representing a gain for a first term of the function, a selectable parameter representing a gain for a second term of the function, and the function comprises subtraction of its second term from its first term.

20. A method for controlling exhaust gas recirculation in an internal combustion engine in accordance with processing of desired engine fueling data whose value is at times transient, the method comprising:

processing that desired engine fueling data according to an algorithm that iterates during a transient in the desired engine fueling data to yield data values for the time derivative of desired engine fueling during the transient, wherein an iteration of the algorithm includes processing the desired engine fueling data according to a function that comprises at least one selectable parameter including a selectable time interval; and

processing the data values for the time derivative of desired engine fueling and data values of mass airflow into the engine to yield a data value for setting exhaust gas recirculation.

21. A method as set forth in claim 20 wherein the at least one selectable parameter further includes a selectable parameter representing a gain for a first term of the function, a selectable parameter representing a gain for a second term of the function, and the function comprises subtracting its second term from its first term.